INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We Protect Hoosiers and Our Environment.
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Eric J. Holcomb, *Governor*
Bruno L. Pigott, *Commissioner*

December 17, 2018

VIA CERTIFIED MAIL

Duke Energy Indiana, LLC
Attn: Owen Schwartz
1000 East Main Street
Plainfield, Indiana 46168

Dear Mr. Schwartz:

Re: Request for Additional Information
Wabash River Generating Station
Vigo County
SW Program ID 84-UP-09

We reviewed your Closure and Post-Closure Plan application received on December 22, 2016 (VFC #80398553) and additional information received December 13, 2017 (VFC #80574745) and February 5, 2018 (VFC #80604100). Additional information and/or changes are needed before we can continue our review. The needed information or changes are identified in the enclosures.

Please note, the closure approach you have proposed leaves waste in place either in contact or in potential contact with ground water. The Coal Combustion Residual (CCR) rule's closure performance standard when leaving CCR in place includes the following requirement: "Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere..." 40 CFR 257.102(d)(1)(i). For purposes of this requirement, it is IDEM's position "infiltration" can come from any direction, and it is not limited to liquids that pass through the final cover system. Specifically, it is IDEM's position ground water infiltration into closed-in-place CCR constitutes "post-closure infiltration of liquids into the waste." Further, it is IDEM's position the phrase "releases of CCR, leachate, or contaminated run-off to the ground or surface waters" includes releases to ground water. IDEM cannot approve a closure plan that would leave CCR in place without a description of how the plan controls, minimizes, or eliminates post-closure infiltration and releases "to the maximum extent feasible." You will note IDEM's position on this matter throughout the comments in the Engineering and Geology Enclosures. In submitting a response to this Request for Additional Information in support of your closure method, please note IDEM's interpretation of 40 CFR 257.102(d)(1)(i), and address that provision accordingly.

Please provide four copies of your response. At least three copies should be on paper printed double sided. If possible, please submit one copy in Acrobat PDF format, either on a CD or DVD with the printed copy, or by e-mail to tkreke@idem.IN.gov. Please note any e-mail and its attachment(s) must total less than 20 MB in size. The date we receive the paper copies will be the receipt date for your response.

Enclosed is a signature and certification statement which must be submitted with each copy of your response; you may submit one signed original and three copies of this statement. One copy can be included as part of the PDF version.

Please mail paper copies and CDs/DVDs to:

Thomas Kreke, Permit Manager
Indiana Department of Environmental Management
Solid Waste Permits
IGCN 1101
100 North Senate Avenue
Indianapolis, Indiana 46204-2251

Since our goal is to provide you with as timely a permit decision as possible, we request you provide the required information within 60 days from the date you receive this letter. If you believe you cannot submit the requested information within that time frame, please contact Thomas Kreke to arrange a schedule for submitting the information.

Public records for your facility are available in IDEM's Virtual File Cabinet at www.idem.in.gov/idem. Indiana Code (IC) and Indiana Administrative Code (IAC) references in this document can be reviewed at iga.IN.gov. IC references are under the "Laws" link; IAC references are under the "Publications" link.

If you have any questions, please contact Thomas Kreke, the Permit Manager assigned this facility, by dialing (317) 233-9468 or by e-mail at tkreke@idem.IN.gov.

Sincerely,

Amy McClure

Amy McClure, Chief
Solid Waste Permits Section
Office of Land Quality

Enclosures: Engineering
Geology
Certification Statement

cc with enclosures: Vigo County Health Department
Vigo County Commissioners
Vigo County Solid Waste Management District
President, West Terre Haute Town Council

ENGINEERING ENCLOSURE
Request for Additional Information
Wabash River Generating Station Ash Pond System
Closure and Post-Closure Plan Application
SW Program ID 84-UP-09
Vigo County

Reviewer: Ghodrat Hiadari
Telephone: (317) 232-8865
Email: ghiadari@idem.IN.gov

Please address the following comments developed from a technical review of your responses received December 13, 2017 (VFC #80574745), and February 5, 2018 (VFC #80604100) to IDEM's October 16, 2017 (VFC #80540977) request for additional information (RAI) regarding the proposed Closure and Post-Closure plan for the ash ponds. Please note this document only provided responses to RAI items related to the South Ash Pond System (i.e., Ash Pond A, Ash Pond B, Secondary Settling Pond and South Ash Pond).

Additional information provided are listed below:

Addendum No.1, Slope Stability Analyses, letter dated January 31, 2018 (VFC #80604100).

- **Ash Pond A- Closure by removal**
- **Ash Pond B- Closure in Place**
- **Secondary Settling Pond- Closure by Removal**
- **South Ash Pond- Closure in Place**

1. **Page 4, response No.8, part b, submittal dated December 8, 2017**

   In regards to erosion control measures, it is stated that all erosion control measures will be outlined in the Storm Water Pollution Prevention Plan (SWP3) prepared for the facility. This document was not included with the response. Clarify if this document was inadvertently not included or if it will be submitted at a later date, after all the necessary approval is granted by Indiana Department of Natural Resources.

2. **Appendix B, Revised Closure and Post-Closure Plan submittal dated December 8, 2017**

   The post-closure costs for item K on page 8 in reference to other cost is not adequate. Include other costs such as, costs for power, effluent pumping, inspection, and effluents sampling and analysis as required by your NPDES permit. In addition, include 10% contingency cost to the total post-closure cost.

3. Appendix B, Revised Closure and Post-Closure Plan submittal dated December 8, 2017

Include 10% contingency costs to the total closure cost on page 8, under item VI.

4. A specific concern regarding the Closure Plan is that the seasonal high ground water elevation may exceed the elevation of the bottom of the CCR ponds (Ponds B), allowing ground water to infiltrate the ash at the bottom of the ponds.

To evaluate the potential for ground water to infiltrate into the ash, please provide the following information:

a) The bottom elevations of the ash lagoons, either through existing data from Duke, a surveyed as-built drawing or data from borings advanced through the ash to the bottom of the lagoons.

b) Seasonal high ground water data. Once again, this can be data already in the possession of Duke or data from monthly water level measurements.

5. The CCR rule's closure performance standard when leaving CCR in place includes the following requirement: "Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere . . . ." 40 CFR 257.102(d)(1)(i). For purposes of this requirement, it is IDEM's position that "infiltration" can come from any direction and is not limited to liquids that pass through the final cover system. Specifically, it is IDEM's position that ground water infiltration into closed-in-place CCR constitutes "post-closure infiltration of liquids into the waste." Further, it is IDEM's position that the phrase "releases of CCR, leachate, or contaminated run-off to the ground or surface waters" includes releases to ground water. IDEM cannot approve a closure plan that would leave CCR in place without a description of how the plan controls, minimizes, or eliminates post-closure infiltration and releases "to the maximum extent feasible." In submitting response to this additional information request in support of your closure method, please note IDEM's interpretation of 40 CFR 257.102(d)(1)(i) and address that provision accordingly.

If the bottom of Ash Pond B at the facility is found to be either in contact or in potential contact with ground water, please address the following:

a) Provide information regarding your plans to control, minimize, or eliminate infiltration of ground water into the waste and potential releases to the maximum extent feasible under 40 CFR 257.102(d), *Closure performance standard when leaving CCR in place*:

(i) An evaluation of feasibility of closure measures to control, minimize, or eliminate ground water infiltration and potential for releases to the maximum extent feasible.

(ii) Describe how the closures are designed so that the measures to control, minimize, or eliminate ground water infiltration and potential releases from waste in contact with ground water will be conducted as part of closure.

GEOLOGY ENCLOSURE
Request for Additional Information
Wabash River Generating Station Ash Pond System
Closure and Post-Closure Plan Application
SW Program ID 84-UP-09
Vigo County

Contact: Leo Kurylo
Telephone: (317) 234-9580
Email: lkurylo@idem.IN.gov

Please address the following comments developed from a technical review of your response received December 13, 2017 (VFC #80574745), to IDEM's October 16, 2017 (VFC #80540977) RAI regarding the proposed Closure and Post-Closure plan for the ash ponds:

1. Duke Energy Indiana (Duke) indicates that they will address all comments regarding the North Ash Pond system under separate cover. Therefore, we were unable to determine the acceptability of the limited responses due to the facility deferring their full response to a later, unspecified date. This includes responses (or portions of responses) to the following comments: 3a, 4a, 4b, 6, 11, and 16.

2. We find Duke's responses to the following IDEM Geology Enclosure comments from the *Request for Additional Information* dated October 16, 2017 (VFC #80540977), acceptable: 3b, 4c, 4e, 4f, 5, 8, 9, 12, 14, and 15. Duke should incorporate the responses to the aforementioned comments into revisions of the *Closure and Post-Closure Plan Application* (Plan) dated December 21, 2016 (VFC #80398553), and address the following comments:

a) Response to IDEM Comment 1

The Response further explains "Alternative No. 1, Closure by Removal." We understand this to include "removal of all CCR materials, plus a minimum of 1 foot of the soils present immediately below the CCR materials," plus a minimum of 30 years of post-closure maintenance and ground water monitoring. We find the explanation acceptable.

b) Response to IDEM Comment 2

The Plan does not propose risk-based closure for any portion of the ash pond system. We acknowledge that Duke "...included this language in the original Closure Plan to document that multiple different closure scenarios and options were considered..." Please note that Duke must follow solid waste rules when utilizing the solid waste in-place closure option.

c) **Response to IDEM Comment 4a (South Ash Pond System)**

Ideally, the Plan should propose nested ground water monitoring wells every 500 lateral feet along the downgradient CCR impoundment boundaries. If any of the ground water monitoring wells at MW-10, MW-11, MW-18, MW-19, or MW-20 show indications of CCR impact, then the facility will need to install additional nested wells to have adequate coverage for defining the nature and extent of contamination. Additionally, IDEM reviewed the issue of lateral spacing for ground water monitoring wells in correspondence dated September 28, 2018 (VFC # 82623303). The comments contained in the September 2018 letter also apply to this RAI. Please revise the Plan to show how Duke will effectively remedy this monitoring system deficiency.

d) **Response to IDEM Comment 4b (South Ash Pond System)**

We maintain our position that downgradient nested well locations should not have an unmonitored aquifer thickness greater than 20 feet. We find acceptable Duke's suggestion that if the deepest ground water monitoring well in a set of nested wells shows evidence of CCR impact, then the facility will install a deep well to monitor the contact between the aquifer and the lower confining unit. Should the deep well installation at the aquifer-confining unit contact occur, IDEM will also request that Duke install enough wells to ensure that the aquifer does not have an unmonitored aquifer thickness greater than 20 feet at the location in question. Additionally, IDEM reviewed the issue of vertical spacing for ground water monitoring wells in correspondence dated September 28, 2018 (VFC # 82623303). The comments contained in the September 2018 letter also apply to this RAI.

e) **Response to IDEM Comment 4d**

IDEM prefers the use of pressure transducers for continuous ground water elevation monitoring to computer models for evaluating potential mounding effects in existing or closed CCR impoundments. We recommend Duke consider this option in your Plan.

f) **Response to IDEM Comment 7**

According to Indiana Department of Natural Resources (IDNR) water well records, in addition to the private wells listed in the Response, four significant withdraw well systems exist on the east bank of the Wabash River, between approximately 0.56 and 1.9 miles from the facility's CCR impoundments. According to IDNR, the four wells have a total withdraw capacity of approximately 26.35 million gallons per day (MGD).

The nearest of these is the well system at The Landing at Fort Harrison Golf Course (IDNR well # 04250, 0.56 miles away) with a 1.73 MGD capacity. The largest of these is the Indiana-American Water Company Lateral (IDNR well # 02368, 1.9 miles away), which reportedly extends under the Wabash River, down-river from, and directly south of the facility's South Ash Pond. The lateral well has a 23.1 MGD capacity. The other two well systems include Indiana-American Water Company wells (IDNR well # 04573, 1 mile away) with a 1.30 MGD capacity, and NEW Interstate Concrete wells (IDNR well # 03882, 1.2 miles away) with a 0.22 MGD capacity.

Based on similar high capacity removal systems on the Wabash River, we expect a significant effect on the hydrology near these systems, including regional ground water flow reversals and significant effects on the recharge of the river itself.

Therefore, Duke needs to present sufficient evidence in the Plan to demonstrate that "... the Wabash River ... acts as a regional groundwater basin divide," such that none of the private wells listed in the Response and none of the significant withdraw wells would encounter ground water impacted by the CCR impoundments.

g) Response to IDEM Comment 10

We find the response acceptable at this time, however the facility should determine the reasons for elevated chloride concentrations in MW-5C, when compared to other site ground water monitoring wells, as Appendix III to Part 257 Subpart D specifies chloride as a CCR indicator constituent for Detection Monitoring.

h) Response to IDEM Comment 11 (South Ash Pond System)

The CCR Rule makes no mention of "interim performance goals," or "period of post corrective construction for on- and off-site groundwater monitoring." Rule 257.95(h) specifies that ground water protection standards will be the U.S. Environmental Protection Agency (U.S. EPA) Maximum Contaminant Level or background concentrations. The Plan needs to adhere to the CCR Rule's procedure of ground water detection monitoring, assessment monitoring, and corrective action.

In addition, the Response appears to indicate that the facility plans to use intrawell statistical methods to determine "groundwater performance standards" and that "data collected from each on-site monitoring well will be used as a benchmark against which any potential post remedy constituent increasing concentration shifts will be gauged." We recommend using interwell statistical methods comparing unaffected,

upgradient background data to downgradient ground water data, as unlined CCR impoundments at the facility may have potentially impacted local ground water for decades.

Interwell statistical methods compare unaffected ground water data to potentially impacted ground water, and therefore should give a better indication of any degree of CCR effects. Intrawell statistical methods compare data from the same well over time, and therefore should only give an indication of post-monitoring increases or decreases in CCR constituents. We believe the degree of past CCR impact would be more difficult to determine with intrawell statistical methods. Therefore, we recommend the use of interwell statistical methods for detection and assessment monitoring programs.

i) **Response to IDEM Comment 13**:

The facility provides their interpretation of criteria under 40 CFR 257.102(d). Regardless of the facility's interpretation, they need to provide the elevations of the seasonal high and low water table, the elevation(s) of the bottom of the waste, and the lithologic composition of soils adjacent to and below the CCR impoundments undergoing closure.

Solid Waste Land Disposal Facilities
Signatures and Certification Statements for Requested Additional Information

329 IAC 10-11-3(d) requires that the signatory of a solid waste land disposal facility permit application and of other information requested by or on behalf of the Commissioner (including the supplemental information requested by our office for your solid waste land disposal facility permit application) sign the following certification statement:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further certify that I am authorized to submit this information."

_____ _____

APPLICANT'S SIGNATURE DATE

_____

APPLICANT'S NAME TYPED

Note: It is not necessary to submit this form if an equivalent signed certification statement is incorporated into your submission